

CLAIMS

1. A liquid tank having a liquid accommodating chamber directly accommodates a liquid, the tank comprising:

5 a liquid remaining amount sensing module including an optical reflector and an information storage element and disposed on a wall of a member forming the liquid chamber so that a reflecting surface of the optical reflector faces an interior of the liquid accommodating chamber,

10 wherein the member has a light transmittance portion at a wall opposite the wall on which the liquid remaining amount sensing module is disposed, such that light can incident onto the optical reflector from an exterior and the light reflected by the optical reflector can exit to the 15 exterior, through the light transmittance portion and the liquid accommodating chamber.

2. A liquid tank according to claim 1, wherein the liquid remaining amount sensing module further has a support 20 member on which the information storage element is mounted.

3. A liquid tank according to claim 2, wherein the optical reflector is provided by a wiring pattern formed on the support member.

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4. A liquid tank according to claim 3, wherein the

wiring pattern is plated.

5. A liquid tank according to claim 1, wherein the information storage element is mold-packaged, and the  
5 optical reflector is formed of a lead frame integrated with a mold package member for the information storage element and constituting a terminal used to electrically connect the element to an external device.

10 6. A liquid tank according to claim 1, wherein the information storage element is mold-packaged, and the optical reflector is formed on one side of a mold package member for the information storage element.

15 7. A liquid tank according to claim 1, wherein the liquid remaining amount sensing module is disposed on an outer surface of housing of the liquid tank and further has a terminal on a part facing the outer surface, the terminal being used for an electric connection to an external device.

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8. A liquid tank according to claim 1, wherein the liquid remaining amount sensing module can transmit and receive information to and from an external device in a non-contact manner.

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9. A liquid tank according to claim 1, wherein the

liquid remaining amount sensing module is fixed to a wall surface forming a ceiling portion of the liquid accommodating chamber when the liquid tank is placed in a use position.

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10. A liquid tank according to claim 1, wherein ink is accommodated as the liquid.

11. An ink jet printing apparatus in which the liquid 10 tank according to claim 1 is detachably installed and which executes printing by ejecting a liquid supplied by the liquid tank, the apparatus comprising:

light emitting means for externally applying light to the wall of the liquid tank which is opposite the wall on 15 which the liquid remaining amount sensing module is placed;

light receiving means for detecting the resulting quantity of light after being applied by the light emitting means, reflected by the reflector of the liquid remaining amount sensing module and finally exit to the exterior of 20 the liquid tank;

means for calculating the amount of liquid remaining in the liquid tank on the basis of the quantity of light detected by the light receiving means; and

means for providing information on the calculated 25 remaining amount to the information storage element of the liquid remaining amount sensing module.

12. An ink jet printing apparatus according to claim 11, wherein printing control is performed using the information on the calculated amount of liquid remaining in 5 the liquid tank.

13. An ink jet printing apparatus according to claim 11, wherein the liquid remaining amount is calculated using a characteristic curve indicating a change in received light 10 quantity detected by the light receiving means, with respect to a change in the length of a part of an optical path in which the liquid is present, the light applied by the light emitting section traveling through the optical path until the light is received by the light receiving section.

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14. An ink jet printing apparatus according to claim 13, further comprising a standard reflector placed where light emitted by the light emitting means is incident and the incident light is reflected and then enters the light 20 receiving section while the liquid tank is not located above the optical path of the light emitted by the light emitting means.

15. An ink jet printing apparatus according to claim 25 14, wherein light emitted by the light emitting section is incident on the standard reflector, the liquid remaining

amount sensing module is calibrated on the basis of a measurement of the quantity of light reflected by the standard reflector and received by the light receiving means.